FORM PTO-1390 (Modified) (REV 11-2000) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: **221206US2XPCT**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR): **10/088526**

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/10229	**12 October 2000**	**14 October 1999**

TITLE OF INVENTION
DETECTION ARRANGEMENT PROVIDED WITH OFFSET COMPENSATION

APPLICANT(S) FOR DO/EO/US
BASTIAANS Eduard Antonius

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include itens (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☒ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☐ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

Notice of Priority/PCT/IB/308
PCT/IB/304/Form PTO-1449

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/088526	PCT/EP00/10229	221206US2XPCT

24. The following fees are submitted:		CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :			
☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	**$1040.00**		
☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	**$890.00**		
☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO	**$740.00**		
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)	**$710.00**		
☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)	**$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =		**$890.00**	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).		**$130.00**	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	10 - 20 =	0	x $18.00	**$0.00**	
Independent claims	1 - 3 =	0	x $84.00	**$0.00**	
Multiple Dependent Claims **(check if applicable)**.			☐	**$0.00**	
TOTAL OF ABOVE CALCULATIONS =				**$1,020.00**	
☐ Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				**$0.00**	
SUBTOTAL =				**$1,020.00**	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +				**$0.00**	
TOTAL NATIONAL FEE =				**$1,020.00**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) **(check if applicable).** ☐				**$0.00**	
TOTAL FEES ENCLOSED =				**$1,020.00**	
				Amount to be: refunded	$
				charged	$

a. ☒ A check in the amount of **$1,020.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **15-0030** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Surinder Sachar
Registration No. 34,423

22850

Surinder Sachar
SIGNATURE

Marvin J. Spivak
NAME

24,913
REGISTRATION NUMBER

April 1 2002
DATE

APPLICATION DATA SHEET

APPLICATION INFORMATION

Application Number::	10/088,526
Application Date::	04/01/02
Application Type::	REGULAR
Subject Matter::	UTILITY
CD-ROM or CD-R?::	NONE
Title::	DETECTION ARRANGEMENT PROVIDED WITH OFFSET COMPENSATION
Attorney Docket Number::	221206US2XPCT

INVENTOR INFORMATION

1-00

Applicant Authority Type::	INVENTOR
Primary Citizenship Country::	The Netherlands
Status::	FULL CAPACITY
Given Name::	Eduard
Middle Name::	Antonius
Family Name::	BASTIAANS
City of Residence::	JB Veghel
Country of Residence::	The Netherlands NLX
Street of Mailing Address::	Kamillelaar 7
City of Mailing Address::	JB Veghel
Country of Mailing Address::	The Netherlands
Postal or Zip Code of Mailing Address::	5467

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 22850

REPRESENTATIVE INFORMATION

Representative Customer Number:: 22850

DOMESTIC PRIORITY INFORMATION

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This Application	National Stage of	PCT/EP00/10229	10/12/00

FOREIGN PRIORITY INFORMATION

Application Number:	Country::	Filing Date::	Priority Claimed::
1013296	The Netherlands	10/14/99	YES

ASSIGNMENT INFORMATION

Assignee Name::	Thales Nederland B.V.
Street of Mailing Address::	Zuidelijke Havenweg 40, P.O. Box 42
City of Mailing Address::	GD Hengelo
Country of Mailing Address::	The Netherlands
Postal or Zip Code of Mailing Address::	NL-7550

Detection arrangement provided with offset compensation

The invention relates to a detection arrangement for observing infrared radiation emitting or reflecting objects, comprising a two-dimensional array of NxM detector elements D(i,j), i≤N, j≤M, arranged in rows and columns; imaging means, for imaging objects and their environment on the array; image processing means, connected to the array, for periodically generating an image-representing two-dimensional matrix of numbers S(i,j), i≤N, j≤M, and compensation means, for compensating an offset for individual detector elements.

A detection arrangement of this type is known in the art, including compensation means for compensating the offset. There even exists a multiplicity of solutions, each however carrying specific drawbacks.

From EP-A- 0.601.534 compensation means are known in the form of a memory, in which for each detector element the response is set down as a function of incident radiation. The disadvantage of these known compensation means is that insufficient account is taken of the effect of ageing of the detector elements and of the fact that also the temperature of the housing of the detector elements comes into play.

From EP-A- 0.647.064 compensation means are known, which are based on the periodical defocussing of the imaging means. The disadvantage is that at the moment of defocussing the detection arrangement cannot be used for the execution of its proper tasks.

From EP-A- 0.849.941 compensation means are known which utilize the movement of the detection arrangement, resulting in the image on the array moving, too. From the

noise that is seemingly added to the image as a result of offset errors, the offset for each detector element can be deduced. Disadvantages of this solution are that it does not work when the detection arrangement is immobile, and that the deduction of the offset requires much calculating effort.

The present detection arrangement has none of these disadvantages and is, according to an aspect of the invention, characterized in that the compensation means comprise a displacement device, positioned between the imaging means and the array and arranged for displacing the image on the array, and filtering means, incorporated in the image processing means, for generating offset compensating values C(i,j) from at least two images with mutually divergent displacements.

A preferred embodiment according to an aspect of the invention is characterized in that the displacement device comprises a rotatably positioned plate that is transparent for infrared radiation. By turning the plate through a previously determined angle, a defined displacement of the image on the array can be effected, after which by comparing the non-displaced image with the displaced image the offset of all detector elements can be established. The displacement of the image may subsequently be cancelled by executing an inverse displacement in the image matrix.

A further preferred embodiment, enabling a number of displacements to be effected in a simple manner, is characterized in that the plate is rotatably positioned around an optical axis, and that at least a front face or a rear face is mounted non-perpendicular to the optical axis.

A further preferred embodiment, enabling virtually any desired displacement to be effected, is characterized in

that the plate is rotatably positioned around two axes, the axes being positioned such that they are at least substantially perpendicular to an optical axis of the plate and that they are mutually perpendicular.

According to a further aspect of the invention, an advantageous implementation of this embodiment is characterized in that the axes are positioned at least substantially parallel to the rows and columns of the array. If the image is displaced in one of the two directions, then a simple shift operation within the rows or within the columns of the image matrix suffices for the thus effected displacement to be cancelled. Preferably the displacement is made to cover a distance corresponding to a distance between two detector elements within a row of within a column.

A further preferred embodiment according to an aspect of the invention is characterized in that the compensation means are arranged for periodically displacing, with the aid of the plate, an image on (p,q) detector elements, and for subsequently activating the filtering means. In that case the filtering means are preferably arranged for iteratively generating offset correcting values C(i,j) for detectors D(i,j) according to an equation

$$C(i,j)_{new} = C(i,j)_{old} + \alpha \, (\, S(i-p,j-q) - S(i,j)), \text{ with } 0<\alpha<1.$$

As the offset for a detector element changes only slowly, a preferred embodiment of the invention is characterized in that $0.02<\alpha<0.2$. By selecting for α a small value, the filtering process is prevented from adding temporal noise to the image.

A further preferred embodiment, requiring little calculating capacity and causing practically no reduction of the available image surface, is characterized in that

$p \in \{-1,0,1\}$ and $q \in \{-1,0,1\}$. In this case, for determining the offset, a detector element is only compared with its nearest neighbours. This is possible because the offset values between adjacent detector elements prove to be virtually uncorrelated.

The invention will now be explained with reference to the following Figures, where:

Fig. 1 schematically represents a detection arrangement according to the invention;

Fig. 2 schematically represents an embodiment of a displacement device featuring a plate provided with a wedge;

Fig. 3 represents a possible movement of a pixel P on four detector elements;

Fig. 4 schematically represents an embodiment of a displacement device featuring a plate provided with four actuators;

Fig. 5 represents a possible movement of a pixel P on five detector elements;

Fig. 6 represents an alternative possible movement of a pixel P on four detector elements.

Fig. 1 schematically represents a detection arrangement according to the invention, with infrared radiation via a lens 1 and a plate 2 falling on an N by M dimensional array 3 of detector elements D(i,j). Lens 1 and plate 2 are made from a material that is transparent for infrared radiation with a wavelength of, for example 3-10 microns, for example germanium, and they are provided with an anti-reflection coating known in the art. An output voltage of the detector elements D(i,j) is measured periodically, for example at 50 Hertz, by A/D converter 4, and passed on for further processing in the form of NxM digital values. The further processing takes place in gain/offset control circuit 5, in which gain differences and offset differences between the

various detector elements D(i,j) are compensated. For the gain differences a correction value per detector element is established once and stored in a gain correction table incorporated in the gain/offset control circuit 5. For the offset differences an offset correction table is provided, which is stored in an offset memory 6, but this table must be adapted continually, because it is dependent on the temperature of the observed object and its environment, and on the temperature of the detection arrangement. Besides, ageing and marginal changes in supply voltages may affect the offset.

For the adaptation of the offset correction table according to the invention, a plate 2 is provided which, driven by a timing module 7, can displace the image on detector array 3. By comparing, in a filter 8, an image obtained before the displacement and stored in an image memory 9, with an image obtained after the displacement, a new, more accurate offset correction table is created. The displaced image is shifted back into a displacement correction module 10, so that the displacement is invisible in the presented image 11. Timing module 7 informs filter 8 also of the current displacement occasioned by plate 2, in the form of a distance (p,q), where p represents the displacement as a number of pixels in a row, and q represents the displacement as a number of pixels in a column.

Following a displacement of the image over a distance (p,q), the new offset correction table is generated in a recursive filtering process according to the formula:
$C(i,j)_{new} = C(i,j)_{old} + \alpha\ (\ S(i-p,j-q) - S(i,j))$, with $0<\alpha<1$
where C(i,j) represents a correction value for the detector element D(i,j) and S(i-p,j-q) and S(i,j) are the output voltages of two detector elements which the displacement has caused to be mutually connected. The factor α determines the speed with which the filtering process will

be running in. A preferred value, which adds little noise to the image is $\alpha = 0.1$.

Plate 2 can cause a displacement in a variety of ways. In a first embodiment, schematically shown in Fig. 2, plate 2 is furnished with a wedge between the front face and the rear face, or plate 2 is plane-parallel but not perpendicular to the optical axis. In both cases a rotation of plate 2 around the optical axis will cause a random pixel to trace a circle on the array of detector elements. To enable it to be rotated, plate 2 is integrated in a toothed ring 12, which can cooperate with a gear wheel 13, which in turn can be driven by a motor 14.

Fig. 3 shows a possible movement of a pixel P on four detector elements in the sequence (i,j), (i+1,j), (i+1,j+1), (i,j+1), a movement that is very suitable for the envisaged correction and is yet so small as to make an offset correction in the image actually superfluous. Further, filter 8 can simply derive the current displacement from the rotational position of plate 2, for example with the aid of an angle transmitter (not shown).

In a second embodiment, plate 2 is furnished with four actuators, as shown in Fig. 4. In the embodiment shown, plate 2 is attached via piezo-electric actuators 15a, 15b, 15c, 15d to a frame 16. The four actuators (known in the art) are plate-shaped and of a type that bends away from the drawing plane when a direct current is applied. By applying, for example, identical but mutually opposite direct currents to actuators 15a and 15c, plate 2 is caused to rotate around an imaginary axis through actuators 15b and 15d, which will cause a pixel to be displaced in the vertical sense. By alternatively driving actuators 15b and 15d, a horizontal displacement can be occasioned in a comparable manner.

Fig. 5 shows a possible movement of a pixel P on five detector elements (i,j), (i+1,j), (i-1,j), (i,j+1), (i,j-1), a movement that is also very suitable for the envisaged correction and is yet so small as to make an offset correction in the image actually superfluous. The movements may, for example, be performed randomly. Actuators 15a, 15b, 15c, 15d are now directly driven by timing module 7, which can therefore also inform filter 8 on the current position of plate 2.

Fig. 6 shows an alternative possible movement of a pixel P on four detector elements (i,j), (i+1,j), (i+1,j+1), (i,j+1), a movement which is effectively similar to the movement shown in Fig. 3. The difference is that the movement is now realised by driving actuators 15a, 15b, 15c, 15d.

Claims

1. Detection arrangement for observing infrared radiation emitting or reflecting objects, comprising a two-dimensional array of NxM detector elements D(i,j), $i \leq N$, $j \leq M$, arranged in rows and columns; imaging means, for imaging objects and their environment on the array; image processing means, connected to the array, for periodically generating an image-representing two-dimensional matrix of numbers S(i,j), $i \leq N$, $j \leq M$, and compensation means, for compensating an offset for individual detector elements, characterized in that the compensation means comprise a displacement device, positioned between the imaging means and the array and arranged for displacing the image on the array, and filtering means, incorporated in the image processing means, for generating offset compensating values C(i,j) from at least two images with mutually divergent displacements.

2. Detection arrangement according to claim 1, characterized in that the displacement device comprises a rotatably positioned plate that is transparent for infrared radiation.

3. Detection arrangement according to claim 2, characterized in that the plate is rotatably positioned around an optical axis, and that at least a front face or a rear face is mounted non-perpendicular to the optical axis.

4. Detection arrangement according to claim 2, characterized in that the plate is rotatably positioned around two axes, the axes being positioned such that they are at least substantially perpendicular to an optical axis of the plate and that they are mutually perpendicular.

5. Detection arrangement according to claim 4, characterized in that the axes are positioned at least substantially parallel to the rows and columns of the array.

6. Detection arrangement according to claim 5, characterized in that actuators are provided, for displacing an image over a distance corresponding with a distance between two detector elements within a row or within a column.

7. Detection arrangement according to claim 6, characterized in that the compensation means are arranged for periodically displacing, with the aid of the plate, an image on (p,q) detector elements, and for subsequently activating the filtering means.

8. Detection arrangement according to claim 7, characterized in that the filtering means are arranged for the iterative generation of offset correcting values C(i,j) for detectors D(i,j) according to an equation $C(i,j)_{new} = C(i,j)_{old} + \alpha (S(i-p,j-q) - S(i,j))$, with $0<\alpha<1$.

9. Detection arrangement according to claim 8, characterized in that $0.02<\alpha<0.2$.

10. Detection arrangement according to claim 8, characterized in that $p \in \{-1,0,1\}$ and $q \in \{-1,0,1\}$.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicant *(for all designated States except US)*: HOLLANDSE SIGNAALAPPARATEN B.V. [NL/NL]; Zuidelijke Havenweg 40, P.O. Box 42, NL-7550 GD Hengelo (NL).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: BASTIAANS, Eduard; Antonius [NL/NL]; Kamillelaar 7, NL-5467 JB Veghel (NL).

(81) Designated States *(national)*: AU, BR, CA, CN, CZ, HU, ID, IL, IN, JP, KR, MX, NO, NZ, PL, RU, SG, TR, UA, US, ZA.

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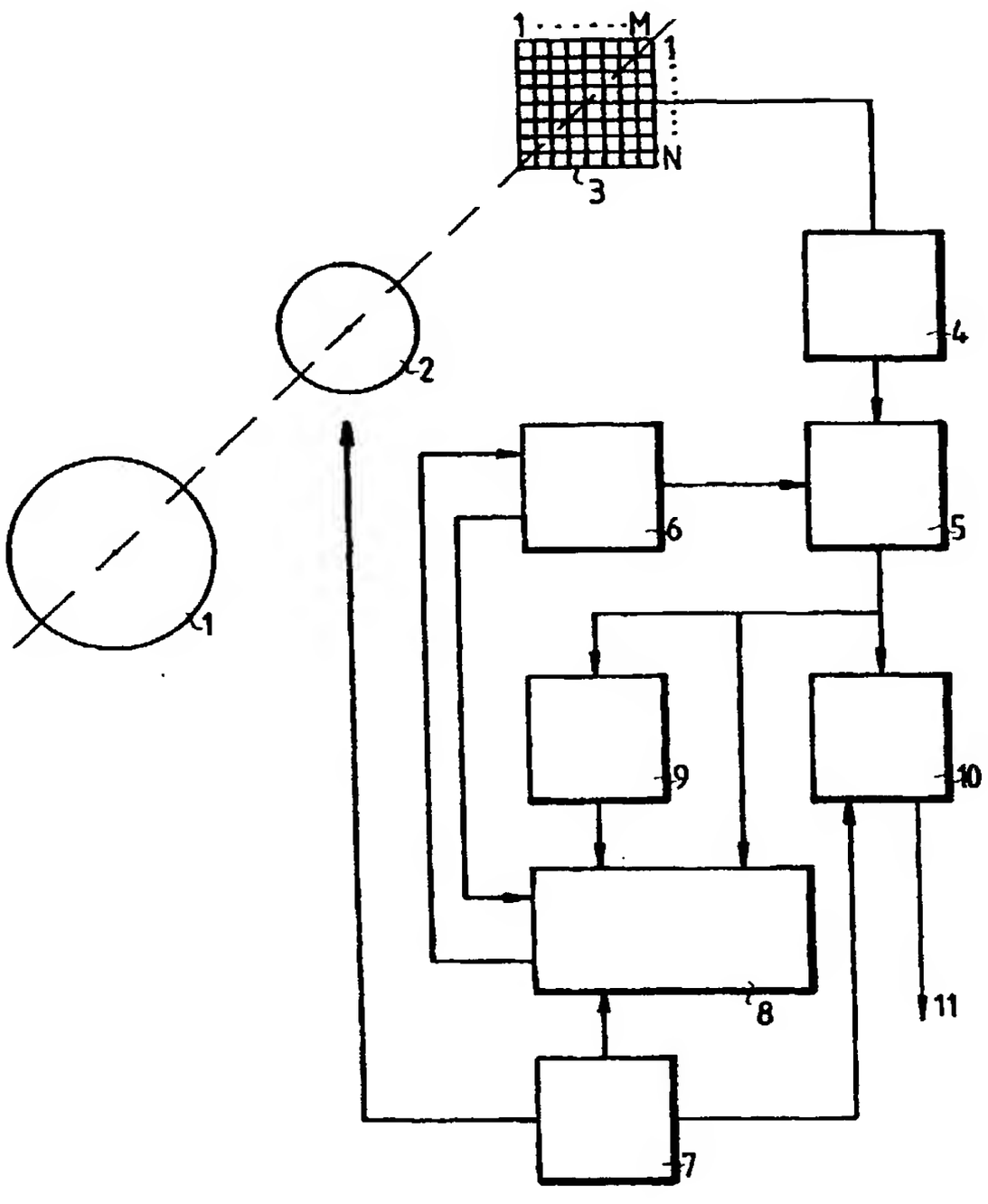
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

[Continued on next page]

(54) Title: DETECTION ARRANGEMENT PROVIDED WITH OFFSET COMPENSATION



(57) Abstract: Offset arrangement for an infrared detector array, which continuously adjusts the offset in a recursive process. With the aid of a displacement device the image observed by the detector array is continuously shifted over a small distance, the apparent intensity changes arising for a pixel being used for adjusting the offset.

WO 01/28233 A1

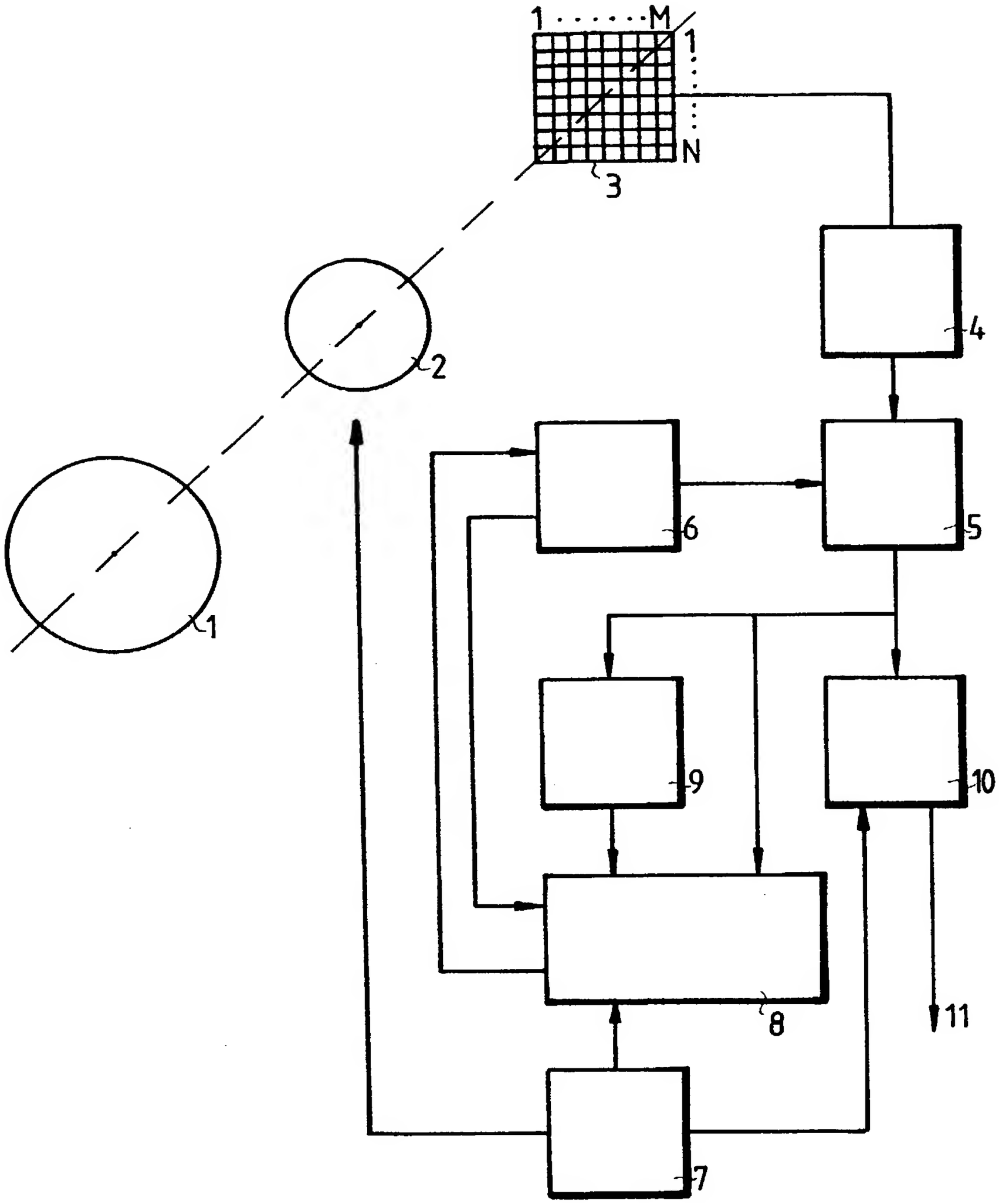


FIG. 1

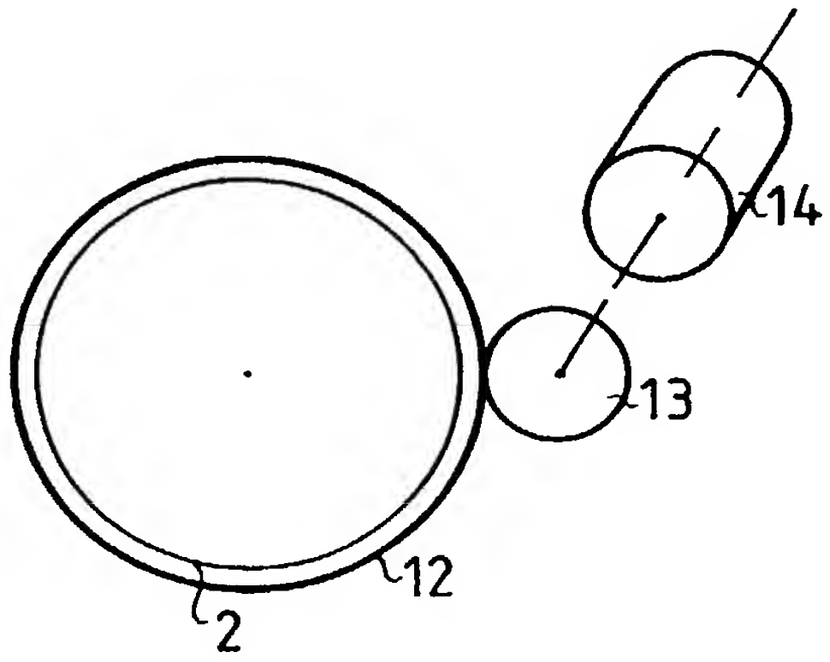


FIG. 2

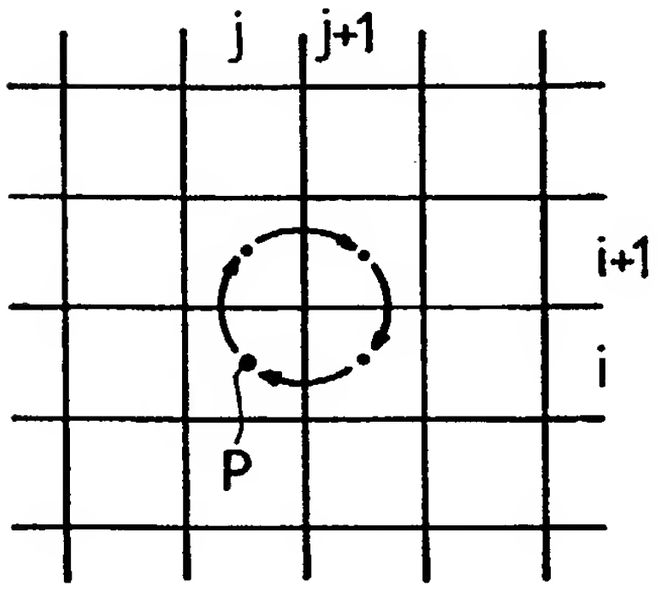


FIG. 3

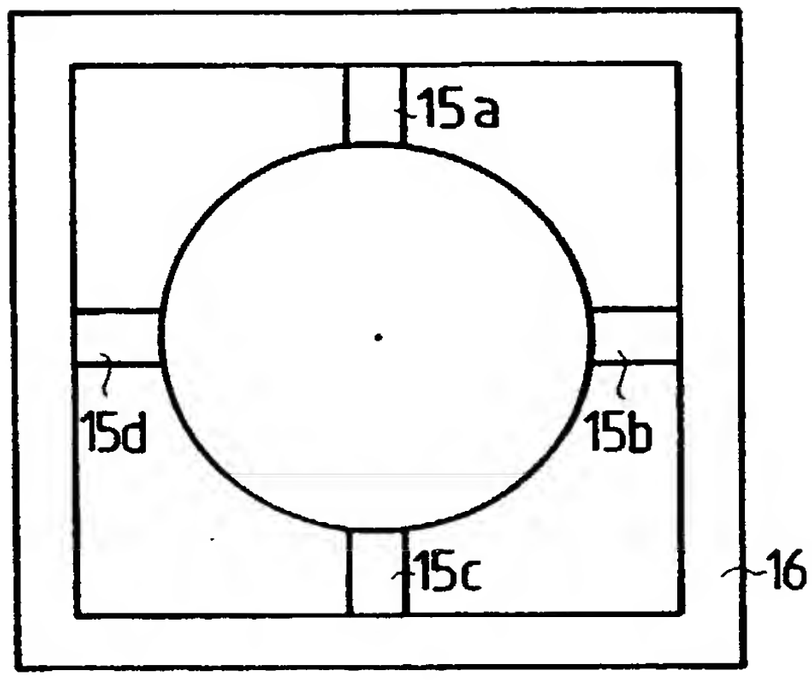


FIG. 4

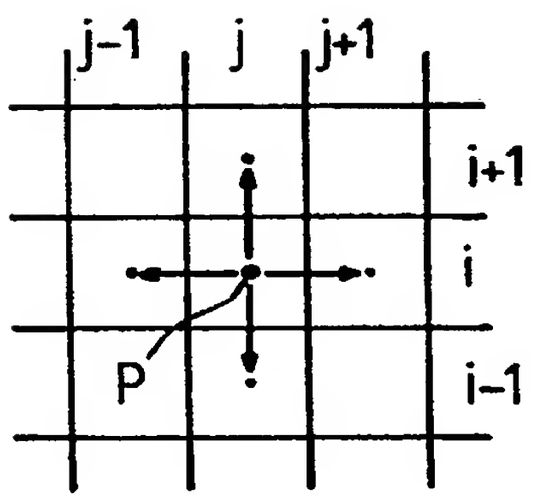


FIG. 5

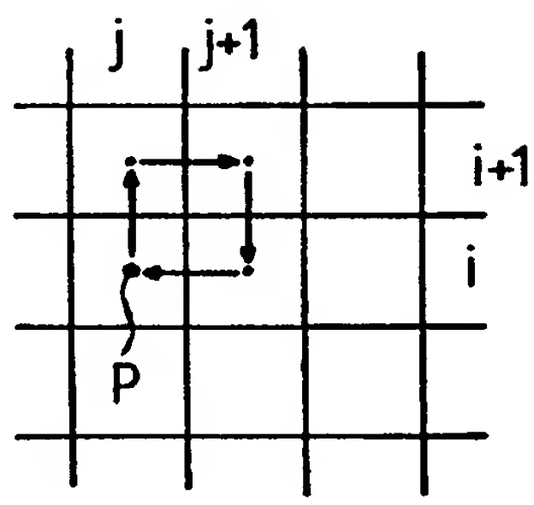


FIG. 6

Declaration and Power of Attorney for Patent Application
Déclaration et Pouvoirs pour Demande de Brevet
French Language Declaration

En tant l'inventeur nommé ci-après, je déclare par le présent acte que:

As a below named inventor, I hereby declare that:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

My residence, mailing address and citizenship are as stated next to my name.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

DETECTION ARRANGEMENT PROVIDED WITH OFFSET COMPENSATION

et dont la description est fournie ci-joint à moins

the specification of which

☐ ci-joint

☐ is attached hereto.

☐ a été déposée le _____

☒ was filed on 12 OCT 2000

sous le numéro de demande des Etats-Unis ou le numéro de demande international PCT

as United States Application Number or PCT International Application Number

PCT/EP00/10229

_____ et modifiée le _____ (le cas échéant).

and was amended on _____ (if applicable)

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

I hereby claim foreign priority under Title 35, United States Code, § 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)
Demande(s) de brevet anterieure(s) dans un autre pays.

			Priority Claimed Droit de priorité Revendiqué	
99 1013296 (Number) (Numéro)	NL (Country) (Pays)	14 OCT 1999 (Day/Month/Year Filed) (Jour/Mois/Anné de dépôt)	☒ Yes Oui	☐ No Non
(Number) (Numéro)	(Country) (Pays)	(Day/Month/Year Filed) (Jour/Mois/Anné de dépôt)	☐ Yes Oui	☐ No Non

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

(Application No.) (Nº de demande)	(Filing Date) (Date de dépôt)	(Application No.) (Nº de demande)	(Filing Date) (Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

PCT/EP00/ 10229 (Application No.) (Nº de demande)	12 OCT 2000 (Filing Date) (Date de dépôt)	(Status: Patented, Pending, Abandoned) (Statut : breveté, en cours d'examen, abandonné)
(Application No.) (Nº de demande)	(Filing Date) (Date de dépôt)	(Status: Patented, Pending, Abandoned) (Statut : breveté, en cours d'examen, abandonné)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d' une incarcération, ou des deux, en vertu de la § 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marquees: *(mentionner le nom et le numéro d'enregistrement).*

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

022850

Addresser toute correspondance à:

Send Correspondence to:

022850

Adresser tout appel téléphonique à:
(nom et numéro de téléphone)

Direct Telephone calls to: (name and telephone number)

(703) 413-3000

Nom complete de l'unique ou premier inventeur 1-00	Full name of sole or first inventor Eduard Antonius BASTIAANS 21 JUIN 2002
Signature de l'inventeur Date	Inventor's signature Date Ed Bastiaans
Domicile	Residence 5467 JB VEGHEL, Nederlands NLX
Nationalité	Citizenship Dutch
Adresse Postale	Mailing Address Kamillelaar 7 5467 JB VEGHEL, Nederlands

Nom complete du second co-inventeur, le cas echean	Full name of second joint inventor, If any
Signature de l'inventeur Datum	Second inventor's signature Date
Domicile	Residence
Nationalité	Citizenship
Adresse Postale	Mailing Address

(Fournir les mêmes renseignements et la signature du troisième co-inventeur et de tout co-inventeur supplémentaire.)

(Supply similar information and signature for third and subsequent joint inventors.)